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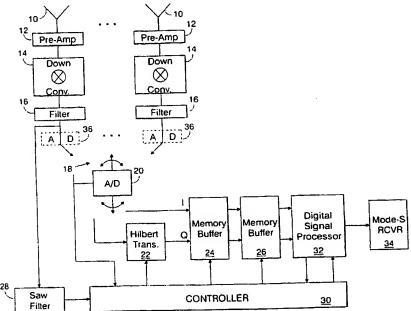
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before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

[Continued on next page]

(54) Title: DIGITAL RECEIVING SYSTEM FOR DENSE ENVIRONMENT OF AIRCRAFT



(57) Abstract: The capacity of a Mode-S ADS-B surveillance radar system is increased by sectorizing the radar system by the use of a directional array of Mode-S, quarter wavelength, single element, stub antennas. The ensemble of signals from the array of Mode-S antenna elements is processed electronically. The signal processing/receiver architecture increases the capacity of the





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### INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER IPC 7 G01S13/93 G01S13/76

According to International Patent Classification (IPC) or to both national classification and IPC

#### **B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

G01S H04B IPC 7

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, INSPEC

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 363 109 A (HOEFGEN GUENTER ET AL) 8 November 1994 (1994-11-08) column 6, line 9 -column 7, line 5 figure 3	1-15
A	US 5 570 095 A (DROUILHET JR PAUL R ET AL) 29 October 1996 (1996-10-29) abstract column 1, line 59 -column 2, line 36 column 3, line 25-54 column 3, line 63 -column 4, line 55 figures 1-3	1-15
Α	US 5 191 349 A (DINSMORE BRUCE E ET AL) 2 March 1993 (1993-03-02) abstract column 1, line 56 -column 2, line 9 column 2, line 54 -column 3, line 16	1-15

	column 1, line 56 -column 2, locolumn 2, line 54 -column 3, locolumn 3, locolu	ine 16
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X Furt	ther documents are listed in the continuation of box C.	X Patent family members are listed in annex.
*A* docum consider *E* earlier filing of *L* docum which citatio *O* docum other	ategories of cited documents:  and defining the general state of the art which is not dered to be of particular relevance document but published on or after the international date the definition of the definition of the special reason (as specified) the publication date of another on or other special reason (as specified) the definition of the definiti	<ul> <li>'T' later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</li> <li>'X' document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</li> <li>'Y' document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</li> <li>'&amp;' document member of the same patent family</li> </ul>
Date of the	e actual completion of the international search	Date of mailing of the international search report
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Name and	mailing address of the ISA  Furopean Palent Office, P.B. 5818 Patentlaan 2  NL - 2280 HV Rijswijk  Tel (+31-70) 340-2040, Tx. 31 651 epo nl.	Authorized officer

## INTERNATIONAL SEARCH REPORT

In: ational Application No PC (/US 01/21889

		PCT/US 01/	21889
C.(Continua Category °	ation) DOCUMENTS CONSIDERED TO BE RELEVANT  Citation of document, with indication, where appropriate, of the relevant passages		Relevant to claim No.
A	EP 0 905 528 A (HONEYWELL INC) 31 March 1999 (1999-03-31) abstract column 2, line 39 -column 3, line 34 column 4, line 46 -column 6, line 25 figures 1-3		1-15
А	ORLANDO V A ET AL: "GPS-SQUITTER: SYSTEM CONCEPT, PERFORMANCE, AND DEVELOPMENT PROGRAM" THE LINCOLN LABORATORY JOURNAL, NEW YORK,NY, US, vol. 7, no. 2, 1994, pages 271-294, XP000864105 the whole document		1-15
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### INTERNATIONAL SEARCH REPORT

Information on patent family members

In ational Application No
PCI/US 01/21889

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
US 5363109	A	08-11-1994	DE DE CA DE EP ES CA CZ DE EP ES RU	4109981 A1 4224645 A1 2063003 A1 59206523 D1 0505827 A1 2090385 T3 2101216 A1 9301478 A3 59304865 D1 0581137 A1 2098600 T3 2090478 C1	01-10-1992 27-01-1994 28-09-1992 18-07-1996 30-09-1992 16-10-1996 26-01-1994 16-02-1994 06-02-1997 02-02-1994 01-05-1997 20-09-1997
US 5570095	Α	29-10-1996	NONE		
US 5191349	Α	02-03-1993	NONE		
EP 0905528	A	31-03-1999	US EP	5923293 A 0905528 A2	13-07-1999 31-03-1999

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